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DWARF FRUIT TREE BULLETIN
OF
THE VAN DUSEN NURSERIES
(March Bulletin) 1914

W. L. McKAY, Prop., Geneva, N. Y.

ENTOMOLOGICAL AND HORTICULTURAL INVESTIGATIONS
RECEIVED
MAR 2 1914
Answered

HORIZONTAL CORDON DWARF APPLE TREE, PROBABLY TWO YEARS OLD.
Photograph from Prof. Waugh.

In compiling this Bulletin acknowledgment is made to the following publications:
The American Fruit Culturist, by J. J. Thomas, one of our pioneer nurserymen and horticulturists, who in 1839 founded the business which is now "The Van Dusen Nurseries."
Dwarf Fruit Trees, by Prof. F. A. Waugh, Horticulturist, Massachusetts Agricultural College.
The Pruning Book, by Dr. L. H. Bailey, formerly Dean of the New York State Agricultural College.
The Miniature Fruit Garden, by Thomas Rivers, a prominent Horticulturist of England during the middle of the last century.
Bulletin No. 116 on Dwarf Apples, by E. G. Lodeman, Assistant in Horticulture, Cornell University.
Dwarf Fruit Tree Culture by Dr. A. W. Thornton, Nurseryman, Ferndale, Washington.

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PRESS OF W. F. HUMPHREY, GENEVA, N. Y

SUBSTITUTIONS

It sometimes happens that we become sold out on some variety ordered, especially late in the spring. In a small order which we know is for home use purposes, we shall this season, if out of a desired variety, substitute some other variety, CORRECTLY LABELED. We shall use a variety as nearly like the one you ask for as possible, and under no circumstances will a low priced variety be sent in the place of a higher priced one. This will be our policy; but if you direct us to make no substitutions, we shall omit a variety we cannot furnish and refund the money. No substitution will be made on an order intended for commercial planting, without your special permission. We desire to bring this whole matter to your special attention, because it is a change from our statement in the general catalogue. If no substitution is permitted, state it in your order and your directions will be followed.

OUR GENERAL CATALOGUE

As announced in previous bulletins our General Catalogue, containing full descriptions of varieties either accompanies this bulletin or has already been sent you. In case you received this catalogue last year and have mislaid it and desire another copy, a postal card with the request will bring it.

PARCEL POST

We receive many requests to send orders by parcel post. In the great majority of cases small orders go cheapest by express. Though the trees or plants weigh but little, their wet packing may weigh many pounds, so that as a rule the parcel post is not economical. On the other hand there are a few cases where we can save the customer by mailing his order, and in all such cases we do so, allowing him to return us the postage paid. We do this in all cases whether requested to or not.

Express rates have recently been equalized so that when going through two companies the cost is no more than through one; this has been in the past the greatest cause of exorbitant express charges. To illustrate how impracticable parcel post is in our business: the express on a 20 pound bale from here to Boston, Mass., is now 31c; by mail the rate on the first pound is 7c, with 4c for each additional pound; this makes the cost of a 20 pound package 83c.

We advise express for all except large orders that take a good sized box, which may safely be shipped by freight, but even such orders should go express if it is very late in the season. If you leave the mode of shipment to us, we will have your own interests alone in view in deciding how to ship.

SPEAKING OF DWARFS

One of the most novel sights seen by an American traveling in England or in continental Europe is that of a flat fruit tree climbing up the side of some mediæval cottage and loaded with choice pears or whatnot, which the mediæval cottager picks leaning from the window. Dwarf trees are popular in England because they take little room and England has little room to spare. Wild dwarf trees are common in American woods; but the propagation of artificially dwarfed fruit trees has not long been practiced in our country.

The first dwarf trees I ever saw were in a Japanese tea garden on the midway at the Pan-American Exposition in 1901. They were unlike anything I have seen since. One, I remember, was a little evergreen of a species strange to me. This had been trained into the shape of a dragon, a realistic dragon, complete to the end of its long, snaky tail (represented by a protruding branch of suitable dimensions coiled upon itself). The artistic effect was augmented by two green glass bottles supported by wires so that their rounded butts, protruding from the foliage, made two as handsome dragon eyes as you ever saw. This little potted tree, perhaps two feet high, was said to be over two hundred years old.

Since then I have seen a good many dwarf trees. Many of them have been perhaps, as interesting as the dragon tree—certainly most have been more useful. Our dwarfs today are all fruit trees, these being, we think, more profitably dwarfed than shade trees. Of course, these are all little trees; and we don't list them in different sizes. Our dwarf trees are one and two years old. You would not want them much older and this is especially true of trees that you expect to train to some special shape. It is the same principle which prompts one who is adopting a boy from the orphanage to choose a youngish boy—one who is not set in his ways but may be trained to suit the man who is going to raise him. And we don't train the dwarf trees we send out, either, because we know you will be better satisfied in the long run if you trim and train them yourself. On pages 10–11 of this bulletin we print explicit

pruning directions for all of the general types of growth in which dwarfs are commonly trained. You will have no trouble, we think, in following these directions successfully.

A garden of dwarf fruit trees satisfies all normal desire for beauty in a garden. It cultivates in you the same gardening skill that results from the management of any garden; and, moreover, aside from the pleasure afforded by the fruit, such a garden offers the greatest possible mental stimulus to its operator.

In the first place he must learn to make the tree grow as well as it can. It will very likely do well enough anyway; but it will not do the best a tree can do unless the gardener gives the matter some attention. He must learn to care for the physical condition of his soil, keeping it clean and loose; and he must study the subject of fertilizers in general and the needs of his own garden in particular.

But, ambitious horticulturist, it is in the shaping of the tree that you are allowed the greatest scope for imagination. You can train any tree or plant to assume any form that your imagination can conjure up. It's a good deal like teaching your old tabby to jump over a stick or to be a 'dead cat,' but it's more fun and more profitable. In the first place you can head the tree at any height you want and with any desired number of main branches. You can shape the head to make a small round bush, or a tall pyramidal bush, or one with a flat top like a table. Or you can dispense with a head and lead the main stem into an upright cordon. You will soon learn how to prune so as to compel the formation of fruit buds on the little branches.

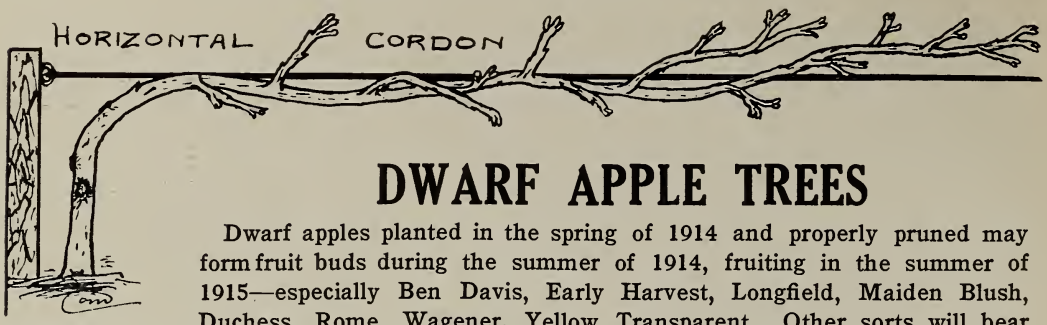
When the tree has consented to grow up into the shape you wanted, and has fruited, you will enjoy multiplying varieties by grafting. If you have a nice Yellow Transparent bush and Mr. Jones across the road has a Red Astrachan, take a small branch of yours and exchange for six inches of his, early in the spring. Set the graft upon a limb of the Yellow Transparent and enjoy watching it come into bearing. You can have a dozen varieties growing on one small bush tree if you wish, and this collection will give you more solid comfort than a porterhouse steak your first meal out of the typhoid ward.

You will learn to distinguish apple varieties, to know which are best to cook and which to eat fresh, which must be used right up and which will keep till next May in the cellar. This study of apple varieties is so fascinating to many men that they need a great deal of self control to force themselves to desert it for their business. So be careful!

You will not, as an amateur, need to investigate methods of packing and marketing fruit in detail, because you will want to eat most of the product yourself and will distribute the surplus among the neighbors who have been admiring the dwarf fruit garden ever since it was planted. Your own expert advice will be in high demand as to the management of the dwarf garden these neighbors intend to plant immediately—JUST LIKE YOURS. [W. J. M.]

A mighty good way to utilize both sides of the old fence

Courtesy of *House and Garden Magazine*



DWARF APPLE TREES

Dwarf apples planted in the spring of 1914 and properly pruned may form fruit buds during the summer of 1914, fruiting in the summer of 1915—especially Ben Davis, Early Harvest, Longfield, Maiden Blush, Duchess, Rome, Wagener, Yellow Transparent. Other sorts will bear the summer of 1916. By the summer of 1917 fruit should have set on trees of such sorts as Baldwin, Fall Pippin, Golden Russet, Golden Sweet, Gravenstein, Lady Sweet, Pound Sweet, Spy, Spitzenburg, all of which, if grown as standards, wait patiently for eight to ten years before fruiting. Two-thirds of this tedious delay may be eliminated by training these varieties to the vase or pyramid forms. Training to a single cordon would bring these varieties into bearing still earlier. Upright cordon apples sometimes fruit the same season they are planted, but generally should not be expected to bear until the following year.

Just a word as to the different stocks. They are all good for such styles of growth as the U, the double U, the candelabrum, the fan, the palmetto, the vase and the pyramid. For single cordons and for potting we recommend the Paradise. This extremely dwarf stock grows the smallest vases and pyramids of all. Trees on stocks of more moderate dwarfing nature are not recommended for potting or for single cordons. They are well adapted to vase and pyramid growth, however, and are somewhat more fruitful than the Paradise trees. These stronger growing dwarfs are very desirable for fan espaliers and for multi-armed horizontal espaliers to cover walls and fences.

Dwarf apple in bush (vase) form, the easiest way to train a dwarf tree, and one that probably gives as much fruit for the same bearing area as any form of training. This cut, shown by courtesy of Prof. Waugh, is that of a Bismarck apple, first year planted, 22 inches high and bearing four fruits. Plant about six feet apart each way.

List of varieties Dwarf Apples

40c each, $4.50 per doz., $30.00 per 100

EARLY VARIETIES

Early Harvest
Excelsior Crab
Golden Sweet
Sweet Bough
Yellow Transparent

FALL AND EARLY WINTER

Autumn Strawberry
Bismarck
Constantine
Duchess
Fall Pippin
Fameuse
Gravenstein
King
McIntosh
Martha Crab
Pound Sweet
Scarlet Beauty
Stearns
Twenty Ounce
Wealthy
Wolf River

WINTER VARIETIES

Bailey Sweet
Baldwin
Ben Davis
Golden Russet
Grimes Golden
Hendrick Sweet
Hubbardston
Jonathan
Lady Sweet
Longfield
Northern Spy
R. I. Greening
Rome Beauty
Spitzenberg
Stark
Stayman
Talman Sweet
Wagener
Winter Banana

DWARF APPLES ON PARADISE STOCK

We have for this season a limited number of Dwarf Apple Trees grown on the Paradise Apple stock, which produces the more pronounced dwarf type of tree. These are only one year old, but at this age are perhaps more easily trained to the exact form desired than an older tree.

Price, 75c each, $7.50 per doz.

EARLY VARIETIES

Excelsior Crab — Red Astrachan
Yellow Transparent

FALL VARIETIES

Bismarck — Scarlet Beauty
Constantine — Stearns
Gravenstein — Twenty Ounce
McIntosh — Wealthy

WINTER VARIETIES

Jonathan — Spitzenberg
Lady Sweet — Stayman
Winter Banana

Trees budded on the Paradise stock are best adapted for growing in the form of Cordons, the training of which is described on page 10. It is so named, as the old writers say, because it was the apple that grew in the Garden of Eden. An old German writer says of it, "whose fruit is the apple of Adam." Another writer, describing certain kinds from Germany says, "Some are sweet and white and are called the Paradise apple." Still another refers to it as "That apple, the Paradise, in which the bite of Adam and Eve can be seen."

From the descriptions these old fellows give of the Paradise apple, it would seem that our common ancestress sacrificed a lot for a taste of mighty poor fruit.

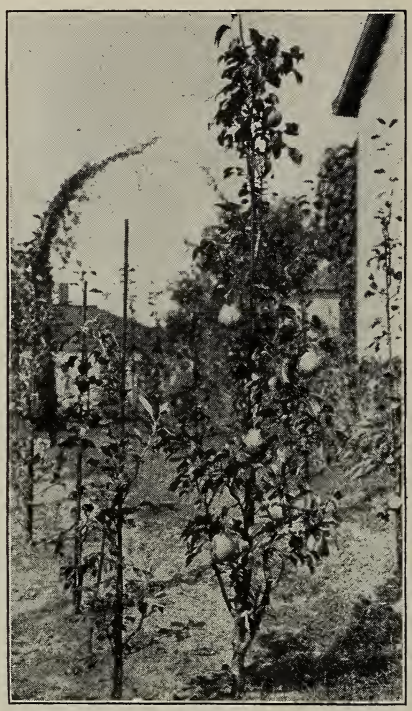
This cut, also by courtesy of Prof. Waugh, shows apples planted in upright cordons, probably in their third year. If it is desired to cultivate by horse, plant rows 6 feet apart and the trees 18 inches apart in the row. They may be planted 15 inches if desired but 18 inches is ample room. The method of trimming for this form is given on page 10. If horse cultivation is not desired, the rows may be made three to four feet apart.

DWARF PEAR TREES

30c each, $3.00 per doz., $20.00 per 100 except as noted

Angouleme (Duchess)
Anjou
Bar-Seckel
Bartlett
Bosc, 50c
Clairgeau
Clapp (C. Favorite)
Flemish (F. Beauty)
Howell
Kieffer
Lawrence
Louise Bonne
Seckel
Sheldon
Vermont Beauty
Wilder
Worden Seckel

Most of these varieties are described in detail in the general catalogue. Those of highest quality for table use are Bar-Seckel, Bosc, Clapp, Flemish, Seckel, Sheldon. There is no style of growth or training to which dwarf pears are not admirably adapted. Six feet should be allowed between pears in vase and pyramid. Pear trees designed to cover a wall or trellis need at least ten feet to develop in. Upright cordon pears may be planted eighteen inches apart; U-form about two feet, and double U-form about four feet. You will enjoy fruit in two years from varieties that as standards do not bear until eight years old.



Dwarf Pear Trees in the garden of Mr. Rudolph Janicke of St. Joseph, Mo., to whom we are indebted for the above cut. Those at the left are upright cordons, the dwarf Duchess in the center with fruit being the same, somewhat modified at the base into vase form. By the way, the Duchess is one of the best varieties as a dwarf.

DWARF PEAR TREES

(Continued)

People have got out of the way of planting Dwarf Pears. Nurserymen have always grown them, and the pear as a dwarf has come to be an old story and in consequence has been neglected. This is where we are wrong; no fruit takes so readily to training in every possible form or gives a more delicious fruit than the pear, and if "Dad" wants to try his hand training fruit trees into all sorts of shapes, this is one of the very best kinds for him to practice on.

Dwarf Plum Trees

50c each, $5.00 per doz., $35.00 per 100

EUROPEAN VARIETIES

Bradshaw	Monarch
Fellenburg	Reine Claude
German Prune	Shropshire Damson
Lombard	Yellow Egg
Palatine, 75c	Pearl, 75c

JAPAN VARIETIES

Abundance	Red June
Burbank	Satsuma
October Purple	Wickson

Dwarf plums are grown in all the different forms, but some kinds are adapted to one form rather than another. In general the European varieties are especially good grown in the vase form and the Japanese as fan-shaped trees. Experience shows, however, that the upright cordon is well suited to Abundance, Burbank, Bradshaw, Lombard, Reine Claude and Yellow Egg. Reine Claude makes a good pyramid, in fact, does well in any form as far as we know. It is also the most satisfactory all-round plum for cooking, for dessert and for early and heavy cropping. Plum trees grown as cordons or vases should, if planted this spring, make fruit buds this summer and bear fruit next summer. Cordons should be planted eighteen inches apart, vases or pyramids six feet, fans ten feet.

We have two splendid varieties for vase training. Pearl, introduced by Burbank fifteen years ago, and Palatine, which has been in this country one hundred and fifty years, coming originally from Germany.

Dwarf Plum Tree, Vase Form, in Bloom
Cut by courtesy of *House and Garden Magazine*

Dwarf Cherry Trees

50c each, $5.00 per doz., $35.00 per 100
except as noted

SOUR VARIETIES

Abesse, $1.00
Early Richmond
English Morello
Marguerite, 75c
May Duke
Montmorency

SWEET VARIETIES

Black Tartarian
Napoleon
Rockport
Windsor

The Dwarf Cherry is another fruit that bears right off; trees planted this spring are almost certain to have enough fruit another summer to attract the serious attention of all the small boys in the neighborhood. A dwarf cherry tree in full bloom is a wonderfully beautiful plant, resembling a huge white geranium.

The upright cordon is a handsome orm for cherries, planted 18 inches apart in the row. They may also be grown well in the vase or pyramid form.

It is well to get these terms clear in mind; by "vase" is meant the low growing bush, with somewhat spreading head; by the terms "bush" and "vase" we mean exactly the same thing. By "pyramid" is meant a pyramid shaped tree, trained somewhat higher than the vase or bush form.

We show here two views of dwarf cherry trees, one showing a vase shaped tree set 22 years ago in a commercial orchard 14 x 14 feet, though 12 x 12 feet was ample, and 10 x 10 feet admissible. This orchard has been bearing profitably for 17 or 18 years. This tree was allowed to grow with no trimming whatever, except to give it proper shape. The other tree taken now and pruned properly can be set at 6 x 6 feet for garden culture in vase form.

DWARF CHERRY TREE
Only One Year Planted. Had 150 Blossoms

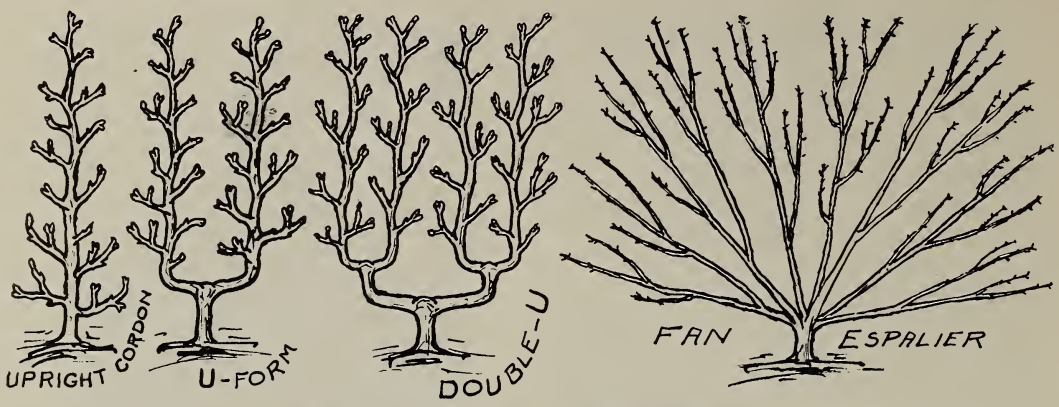
Quince Bushes

35c each, $3.50 per doz., $25.00 per 100

Bourgeat
Champion
Orange
Sweet Winter, 50c

All Quince trees are dwarf in habit of growth—really little bushes, and are usually grown in bush or vase form. As they fruit, however, from wood growing the same year, it seems to us that they are most admirably adapted for cordons. They bear very early, the Champion especially always bearing in the nursery row. This variety is almost certain to bear a year from planting. For commercial planting set 10 to 12 feet apart, and for garden vase form 6 x 6 feet, with of course, closer pruning.

22 Year Old Dwarf Cherry Tree—Mr. McKay Standing Near.



DWARF PEACH TREES

30c each, $3.00 per doz., $20.00 per 100

Dwarf peach trees planted spring of 1914 should have fruit the summer of 1915. Do not try to grow peaches in a single cordon. The peach grows faster than other fruit trees; and if its energy is concentrated in a single stem, it will make rapid wood growth without producing any fruit. The many branched forms are best for peaches. The double U, candelabrum, fan, palmette and the many-branched horizontal espalier—all these are forms for the peach, as are also the vase and pyramid.

Six feet is sufficient for the vase or pyramid. Four feet is a good distance for double U and candelabrum. We recommend fifteen feet for the more spreading espalier forms, one of which, a fan espalier peach, is shown in the cut below by courtesy of the House and Garden magazine.

For a fuller description of varieties see our general catalogue and also our February Peach Bulletin. The COLOR COLLECTION of dwarf peaches, described on page 5 of that bulletin, may interest you.

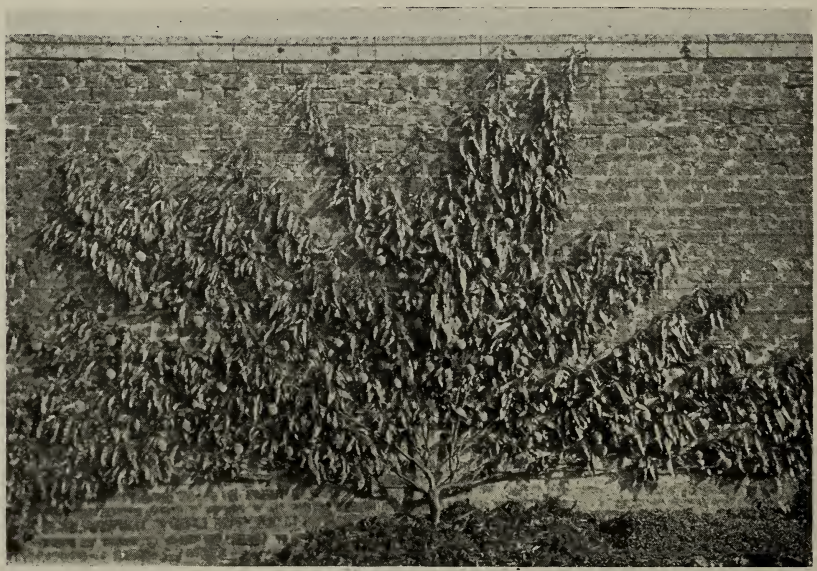
Abundance 50c	Greensboro
Belle of Georgia	Lamont 50c
Carman	McKay's Late 50c
Champion	Mt. Rose
Crawford's Early	Niagara
Crawford's Late	Salway
Crimson Beauty 50c	Smock
Elberta	Willett 50c
Fitzgerald	Yellow St. John

Abundance, Crimson Beauty and Lamont may be included in orders of 12 or more at the $3.00 rate while they last.

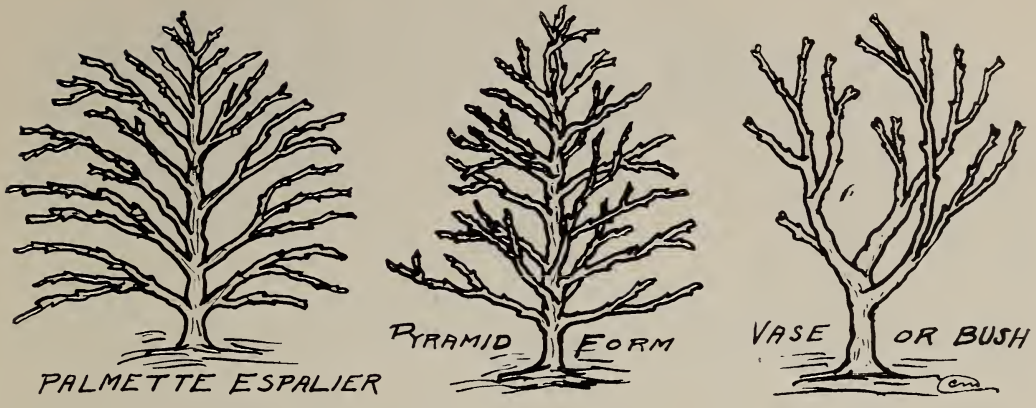
Dwarf Apricot Trees

Montgamet, 40c each, $4.00 per doz.

Apricots are not adapted to the cordon. For pyramids plant six feet apart and for fan espaliers ten feet. You will insure a crop of July fruit by covering your dwarf apricots with cheesecloth every night during the rather early blooming season, thus protecting the blossoms from frost. This would be impractible with a large tree but is easy with these small ones.



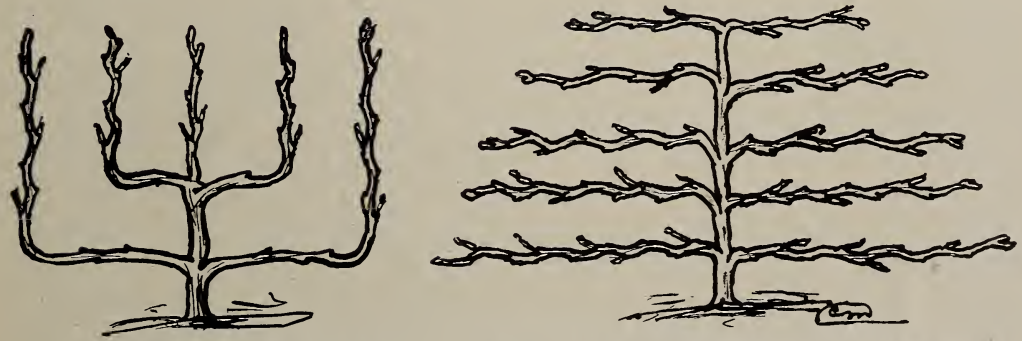
Fan Espalier Peach Tree Trained Against a Wall.
Cut by courtesy of *House and Garden Magazine.*



The Various Dwarf Forms

Dwarf tree forms are classified according to their number of fruit bearing stems and the direction in which these are made to grow. A tree with only one stem is a cordon—upright, horizontal, oblique as the case may be. It is a double cordon if allowed to grow in two stems, making, for instance, a U or a T. Horizontal cordons are often grown double in this T form. Sometimes each branch of a U is made to divide to form a subordinate U. The double U thus formed has four branches, see opposite page. The candelabrum form, see bottom of page, has a central vertical stem with two, three or more stems on each side branching outward and upward like the arms of a compound candlestick. Five or more branches may radiate from about the same point on the trunk, forming a fan like the peach tree on page 8. In a palmette, the lateral branches extend upward to either side, issuing from points at intervals along a central vertical stem, see diagram at top of this page. A many-armed horizontal espalier, see bottom of page, is formed by lateral branches growing out horizontally to both sides of a vertical stem like wires running both ways from a fence post. "Espalier," strictly speaking is a general term covering all the above forms, although sometimes restricted to cover only the broader forms such as the fan. The dictionary defines "espalier, as a "fruit tree trained on a trellis." You will need a trellis of some kind for your dwarfs in order to train them to the desired form. A simple homemade wooden frame is good, or chicken wire stretched between two stakes, or a high wire fence, or the side of house or barn, or some old stone wall—all are good. The support, whatever its material, should be at least eight feet high to allow for many years' growth, although a lower trellis will do for several years.

There are two self supporting forms to be mentioned, the pyramid and the vase. The vase (sometimes also called "bush") is so formed that its main branches, usually from three to six in number, radiate outward and upward from about the same height on the main trunk, making a crotch like that of the Greening tree on the cover of the January bulletin, but, of course, much smaller. The pyramid, so-called, is really conical in shape. It consists of one main stem extending to the top of the tree with branches growing outward from this on all sides. The vase and pyramid are shown in the diagram at the top of the page.



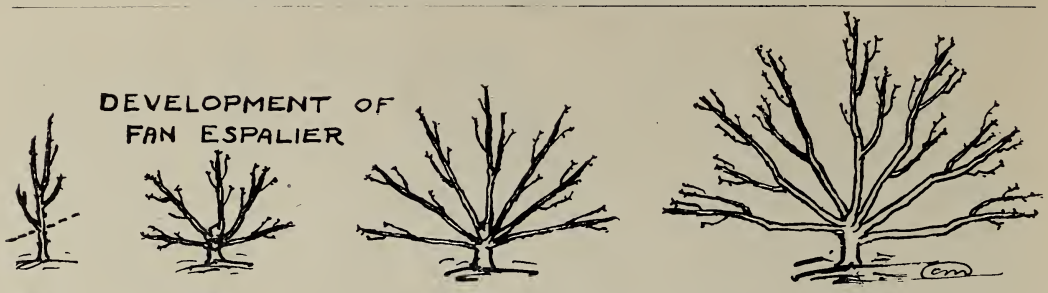


Fig. 1 Fig. 2 Fig. 3 Fig. 4

TRAINING TO FAN ESPALIER

Trim the tree we send you about as indicated by the dotted line in Fig. 1. Figure 2 shows about as it should appear the fall of the same season, and Figs. 3 and 4 as it should appear at the close of the two following seasons. These two seasons the tree may show some fruit.

PRUNING DWARF FRUIT TREES

So much might be written on this subject that were we to try to give directions to cover every possible condition we would simply be confusing the majority of our readers. For this majority, therefore, we are giving what seems to us to be just the most essential general principles; the minority who are skilled in these things do not need our instructions.

In general, winter or dormant pruning induces wood growth, while summer pruning suppresses wood growth and tends to the formation of fruit buds. The pruning of dwarf fruit trees is necessary to limit the growth of the tree, to train it to the desired shape, and to compel early production of fruit.

CORDONS. Cordons are secured by training to a single central stem or leader, with a well controlled growth of side shoots along its entire length. This leader may be allowed to grow as an upright cordon, of which the "U" and double "U" are forms (see page 8); or trained to grow at an oblique angle as an oblique cordon, or it may be bent at right angles and trained as a horizontal cordon. When grown in the latter form, the bend should be about fifteen inches above the ground, and should be made early in the growing season. In the case of the oblique and horizontal cordons, do not let any side shoots grow near the bend, or between the bend and the ground.

The general principle in pruning all these forms of cordons is the same. At the end of each cordon stem must be left a shoot or "leader" to grow untrimmed during the summer, to insure a vigorous circulation of sap. With the exception of this leader, follow this rule: as soon as side shoots make a growth of five buds cut or pinch them back to three buds. From these buds other shoots will start: as soon as they have grown to three buds pinch them back to one or possibly two buds, and keep doing this during the remainder of the growing season. The leader may have grown from one to three feet: in late Winter or early Spring cut this leader back to whatever height you want to leave the tree that year. Each subsequent year follow the same treatment, let the leader grow untrimmed till Spring, keep pinching back the side shoots as above described.

When the tree has about reached the height at which you wish it to remain, trim back the leader each spring to within only an inch or two of the previous season's growth.

The strongest growth is always at the top: if the lower shoots are slow in developing, retard the growth of the upper ones by making a longitudinal incision through the bark, giving the lower ones a chance to catch up.

The Cordon form is very practical for most all apples, pears and cherries. Excepting for the slower growing varieties it has not generally been considered suitable for the plum, although Prof. Waugh found the varieties mentioned on page 6, some of them being the very strongest growers, well adapted to this method of training. The single cordon is not at all suited to the peach.

If, after many successive prunings, too many spurs are formed up the leader, cut some of them back to the main stem. It is safer, however, not to do this in one operation, but to trim off about half the surplus length one season, and cut off the rest the second season.

Our illustrations on page 8 show the upright cordon form, also two simple variations called the U-form, and the double U-form. When the tree is first set, cut it off ten or twelve inches above the ground. This will force a number of shoots at the end of the stub. When these are well started select two, on opposite sides of the main stem, and cut or rub off all the rest. You will have to use a wooden form or some mechanical arrangement to make these two branches grow horizontally away from the main stem as shown, and also to turn them vertically upward when they have become long enough. Later when the wood becomes ripened it will harden and these branches will keep without aid the form to which they are trained. When you have secured the two leaders growing upward, treat each the same as the single cordon. The formation of the double U is seen to be the same operation.

TRAINING TO PYRAMID FORM

Fig. 1 shows one year tree fresh planted, trimmed to a whip and cut off at dotted line. Fig. 2 shows the shoots that start out on all sides, some of which should be rubbed off, the rest left to grow into Fig. 3. Prune Fig. 3 in the fall as shown by dotted lines. The following season's growth, Fig. 4, should have some fruit; and it is pruned as indicated the following fall. The diagram represents two years of good growth or three years if the growing conditions are unfavorable.

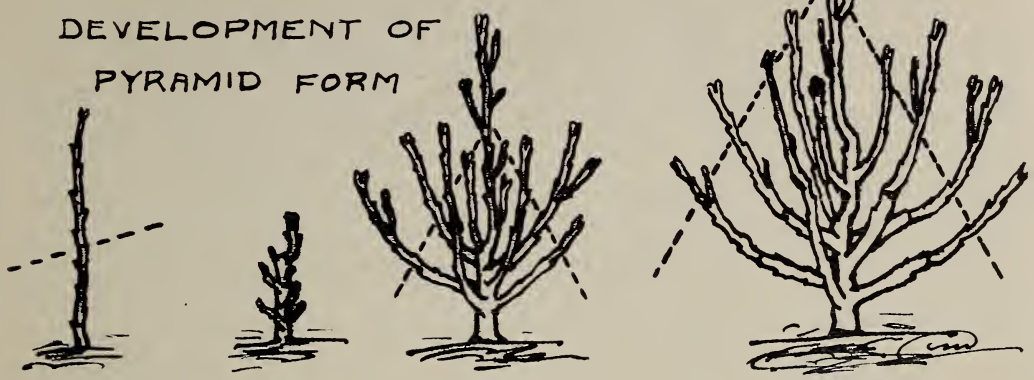


Fig. 1 Fig. 2 Fig. 3 Fig. 4

We said above that the single cordon form was not advisable for the peach. This is absolutely true. There is more chance for success, however, when the U-form of cordon is employed, and there will be less difficulty yet when the double U form is used, this last form being quite practical. The ranker growing plums will also succeed in the U and double U forms of cordon, and the ranker growing varieties of apples, pears, and cherries will be controlled somewhat more easily in these forms.

THE PYRAMID (see page 9). This is one of the forms requiring no stake or trellis for its support. It will have a vertical central stem, with lateral branches on all sides. These lateral branches are so controlled by pinching and trimming, that the lower ones make the longer and stronger growth, while those higher up on the stem are kept shorter, the shortest of all being of course at the top. This secures the pyramidal form.

THE VASE (see page 9)—The vase is also one of the self-supporting forms. If the tree you receive is already headed and branched near the ground, select three to five of these branches for the head of the tree. If the tree is not headed or branched near the ground but is a single shoot or "whip", cut it off at such height from the ground as you wish the head to form, usually about 8 to 15 inches. From the branches that start out below this point you will form the head of the tree. Keep the butt of the tree free from all other shoots. The terminal growth of the main branches selected for the head are allowed to grow unchecked during the growing season. When the side shoots of these have grown from five to eight buds, pinch them back so as to leave four buds only. After this, every time they grow three or four new buds, pinch them back to leave only one or two buds on the new growth. All suckers and crowding shoots are removed entirely. At the dormant pruning in March, head back the main branches of the head about half their length, and if the interior branches of the tree seem too thick, remove as many as seems necessary. The peach in particular is apt to produce much more wood than the size of the tree should carry. After the first one or two dormant prunings, we suggest cutting back the main branches to within two or three buds of where it began to grow the year before. The exact management here will depend on the size of tree the gardener wishes to make, since if he wishes a larger tree these main branches will not be cut back so much.

THE FAN (see pages 8 and 10)—When planted the trees should be stubbed off six or eight inches above the ground. Of the shoots which start from the stub select four or five only to start with, and cut or rub off all the remainder. When the chosen five have become long enough to manage, fasten them to their support in fan shaped arrangement. Keep the butt of the tree free from all surplus shoots and sprouts. A few more radiating arms of the fan may be allowed to grow later if desired. Summer-prune each of the radiating branches as though it were a single upright cordon as described before. The peach is particularly good for training in this shape.

THE PALMETTE (see page 9)—Stub off the tree the same as for the fan shaped espalier, and select three of the resulting shoots, such that one will form the main central stem of the palmette, and the others form the two lowest lateral branches, one on each side. As the main stem grows, the higher lateral branches may be allowed to grow. All side shoots not required for the desired form of tree are removed from the main stem from time to time as they appear. The central stem is allowed to grow unchecked throughout the growing season. It may be headed back as severely as desired at the time of the dormant pruning in March. The lateral branches are all pruned just as if each were an upright cordon.

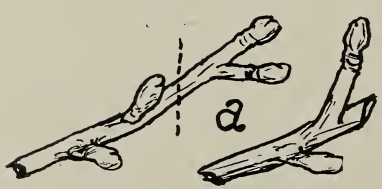
HOW TO MAKE TREES MIND

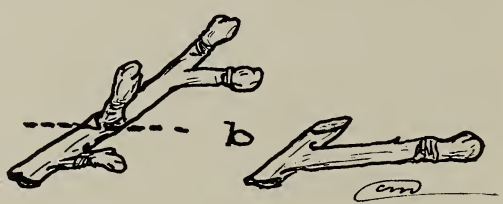
To make fruit buds grow where only leaf buds grew before: When young trees grow fast they make leaf buds only. Checking wood growth by summer pinching back or by root pruning causes fruit buds to form. These have a different shape from leaf buds, being rounded and blunt, while leaf buds are slender, sharp and generally smaller.

To check growth of top without cutting it: When a tree grows so fast that you can't keep it in bonds without cutting the top all to pieces, try root pruning instead. With a spade or mattock dig into the ground twelve to eighteen inches from the tree and cut through a few of the roots. This may check growth as much as you want. If it doesn't, in a week or so dig in on the other side and cut a few more. The older the tree, the farther out should the roots be cut.

To insure the growth of a bud that may be dormant: If there is any bud on the tree so desirably placed that you want it to surely grow, you need not rely on chance. Take your knife and cut a small horizontal notch in the bark a quarter of an inch above the bud. This should start the growth of the bud in a few weeks if done early in the growing season.

To make a shoot start in any desired direction: Merely prune to a bud pointing in the desired direction, i. e., cut off the branch which is to produce the shoot just above (or beyond) the bud from which you want the shoot to grow. E.g., prune to (a) an inside bud for an upright shoot and to (b) an outside bud for a horizontal shoot.





DWARF VERSUS STANDARD TREES

We are often asked about planting dwarfs commercially; generally speaking, we advise at least the permanent orchard of standard trees, using dwarfs or, if preferred, other standards as fillers; we regard the dwarfs, however, as perfectly legitimate fillers.

There is, however, occasionally a planter who is so situated as to size or location of planting, who is an enthusiast in fruit matters and who will give the close care that dwarf trees need under close culture, who is, in my opinion, justified in going into the dwarfs alone as a commercial proposition. This is too wide a question, however, to discuss here. What I do wish to make perfectly clear, however, is my firm belief that there is no branch of horticulture so well adapted to the home garden or orchard, that will give the grower more pleasure, give such scope for his imagination and ingenuity and at the same time bring him substantial returns in the choicest fruits, as the growing of fruit trees in their dwarf forms.

Probably more commercial fruit growers are weak in the knowledge of proper pruning of trees, than in any other point. I know of nothing that will better develop one's knowledge of how to properly trim fruit trees to get certain results, than handling these dwarf trees.

"How big will the dwarf trees grow?" This is asked of us hundreds of times each year; well, they will grow about as big as you let them. I regard the dwarfing of trees as depending far more on the matter of pruning than on the root on which it is grown. I have seen 12 year old trees on Doucin 15 feet high and crowding at 16 feet apart, and on Paradise the same age, 8 feet high and crowding at 10 feet apart. They were untrimmed except to shape them. The same trees could have been kept right down to any of the close forms here described, with proper pruning; in other words, it all depends on you. [W. L. M.]

Cordon Gooseberries

Industry, 25c each, $2.50 per doz.

Dr. A. W. Thornton of Ferndale, Washington, an authority on dwarf trees and their training gives the following directions for growing the Industry in upright cordons with great success: "These cordons are planted only 9 inches apart in the row and no side branches are allowed to grow. Trim side branches to three buds. When a sprout makes five leaves pinch it back to three leaves and that makes a fruit spur right there, and in this way one can furnish fruit spurs to the very top and all the fertility of the soil is forced into the fruit, making them attain the great size and high quality that distinguish them." Treated this way the Industry will give you fruit the first season.

SOME ATTRACTIVE COLLECTIONS

OF

STANDARD TREES AND SMALL FRUITS

At Greatly Reduced Prices When Sold as Collections

The Big Red Apple Collection

of standard trees, extra size, headed by that new SCARLET BEAUTY, the greatest and reddest apple of them all. Originated in St. Lawrence County, N. Y. So far as we know we are the only nurserymen who are growing this variety. This Collection is offered as a choice assortment for home use covering all seasons and for all uses.

1 SCARLET BEAUTY	1 Early Harvest	1 Sweet Bough	1 Constantine
1 Fall Pippin	1 King	1 Maiden Blush	1 Wolf River
1 Hubbardston	1 Northern Spy	1 Roxbury Russet	1 Stark
1 Talman Sweet	1 STEARNS		

14 TREES. LIST PRICE $4.60. COLLECTION PRICE $3.00

The STEARNS is another new variety well recommended by our State Experiment Station, of which we own the entire control.

McINTOSH STANDARD APPLE COLLECTION

A smaller collection of only eight varieties, extra size
One each of the following varieties

SCARLET BEAUTY	Early Harvest	King	Northern Spy
STEARNS	Fall Pippin	McIntosh	Winter Banana

LIST PRICE SINGLY, $2.90. COLLECTION PRICE $2.00

THIS IS NOT A BARGAIN—IT'S A GIFT!

The following trees are all dug and in cellar and they are going to be sold:

100 Ben Davis	43 Grimes	6 Ontario	16 Stayman
60 Boiken	25 Hendricks	24 Pewaukee	102 Stearns
75 Constantine	72 Hubbartson	8 Pound Sweet	135 Scarlet Beauty
100 Duchess	98 King	33 Red Astrachan	91 Twenty Ounce
5 Early Harvest	10 Longfield	300 Rome Beauty	54 Wagener
6 Early Strawberry	570 McIntosh	7 Rox Russet	87 Wealthy
14 Fall Pippin	10 Maiden Blush	56 Seek-no-Further	18 Wolf River
20 Fameuse	189 Northern Spy	13 Spitzenberg	7 Yellow Bell
4 Golden Russet	4 N. W. Greening	82 Stark	41 Yellow Transparent
5 Excelsior Crab	4 Hislop Crab	33 Martha Crab	

These run about 3 to 4 feet in height and are strictly first-class in all respects except size. In lots of not less than ten trees, any variety, they are yours for TEN TREES FOR A DOLLAR.

We reserve the right on assorted orders to substitute if out of a variety, each tree of course being correctly labelled.

On your order designate these as March Special Apples.

JUNE RASPBERRY—NEW

The earliest red raspberry, ripe in June. Put out with highest recommendations by the New York State Agricultural Experiment Station. Guaranteed genuine.

PRICES

25c each, 50c for 3, 75c for 6, $1.25 for 12, $2.25 for 25, $4.00 for 50, $7.50 for 100. 25 plants or less, postpaid.

ST. REGIS RASPBERRY

A comparatively new red raspberry which bears from July to October—a true, everbearing variety. Not only a great novelty, but a berry of real merit. Very early.

PRICES

10c each, 25c for 3, 40c for 6, 75c for 12, $1.25 for 25, $2.00 for 50, $3.50 for 100. 25 plants or less, post paid.

STANDARD PEARS

THE COMICE COLLECTION,
Extra Size

1 BOSC, $1.00 — 1 Kieffer, $.35
1 COMICE, $.75 — 1 Seckel, $.35
1 Flemish, $.35 — 1 Sheldon, $.35

Total List Price, $3.15

COLLECTION PRICE, only $2.00

JUST A FEW LITTLE PEAR TREES

to go with the March Special Apples, about the same size.

95 Bartlett — 30 Lawrence
25 Clapp — 23 Seckel
5 Duchess — 10 Sheldon
15 Kieffer

EIGHT TREES FOR ONE DOLLAR

Designate them as March Special Pears

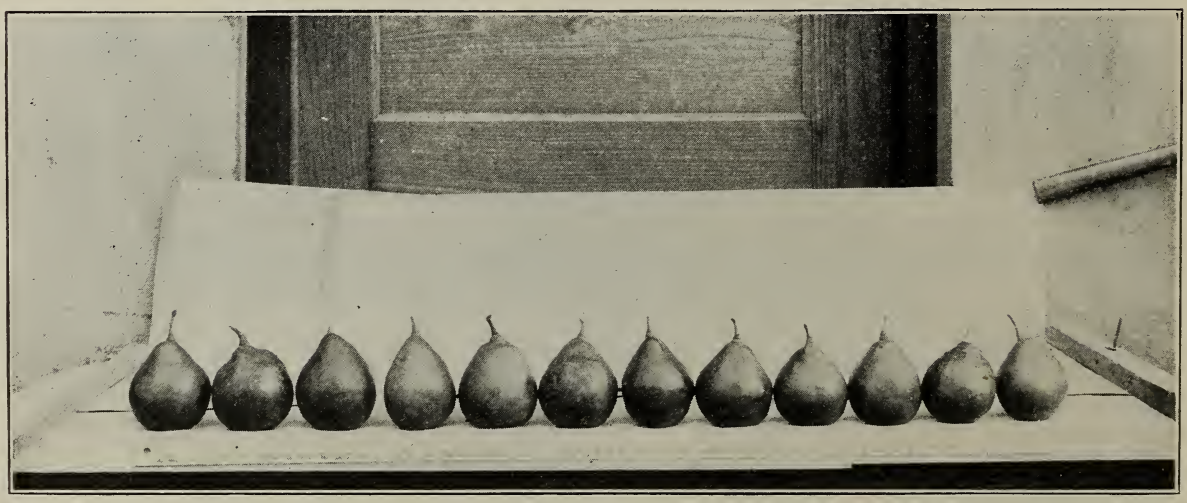
BOSC STANDARD PEAR TREES

The highest selling pear grown. No. 2 size sold readily in December last for $2.50 per bushel. Can be kept in cold storage to bring them in for the Holiday trade in absolutely perfect condition.

We exhibited several boxes of Bosc at the Massachusetts Fruit Growers' Association meeting at Springfield, Jan. 16, 17 and 18, 1914, brought back to Geneva and sent to Philadelphia and New York for display, and carried clear into February.

One year trees $1.00 each, $10.00 per dozen, $50.00 per 100.

(Most nurserymen are able to grow Bosc only by the clumsy method of "top-working." Our one-year olds are budded on French pear seedlings the same as the rest of our pear trees, and are superb trees from 3 feet in height up to four feet, and many of them still taller.)



Very few fruit growers in the East even know what the "COMICE" Pear is. Well, here's a "yard" of them, taken fall of 1913. In quality, among all the varieties that we offer I would place them with Seckel and Sheldon. For a superb home variety they are unsurpassed. With the COMICE Collection you get both BOSC and COMICE.

STANDARD CHERRIES

THE MARGUERITE COLLECTION

1 MARGUERITE	$.50
1 ABBESSE	.75
1 English Morello	.35
1 Early Richmond	.35
1 Black Tartarian	.35
1 Rockport	.35
Total Price	$2.65
COLLECTION PRICE	$.175

THE "MARGUERITE" STANDARD CHERRY COLLECTION

This includes the two "New" old cherries, Marguerite and Abbesse. Both are old varieties, but only recently have we taken them up and re-introduced them. Our catalogue describes both at some length, and a Bulletin on some valuable varieties not generally known, from the State Experiment Station, will speak very highly of the Abbesse.

STANDARD PLUM TREES

We offer two attractive Plum Collections, one of the European and one of the Japan varieties.

European Varieties

PEARL COLLECTION

1 PEARL	$.75	1 PALANTINE	$.35
1 Bradshaw	.35	1 Lombard	.35
1 Fellenburg	.35	1 Reine Claude	.35
Total Price			$2.65
COLLECTION PRICE			$1.75

Japan Varieties

MIKADO COLLECTION

1 Abundance	$.35	1 Oct. Purple	.35
1 Burbank	.35	1 Satsuma	.35
1 Red June	.35	1 Wickson	.35
Total Price			$2.10
COLLECTION PRICE			$1.50

PEARL is one of Luther Burbank's productions, PALATINE is another "new" variety originating in this country about 1760. If you read Hedrick's note on them from the "Plums of New York" you will buy both these varieties.

In the collection or sold alone we reserve the right to fill with one year old trees

STANDARD PEACH TREES

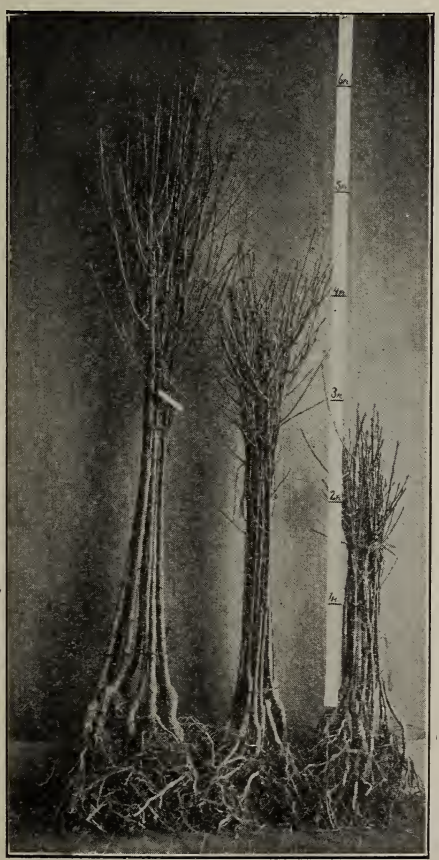
In last month's Bulletin we offered two Standard Peach Collections.

STANDARD COLOR COLLECTION

1 Champion	$.20	1 Niagara	$.20
1 Crimson Beauty	.30	1 Belle of Ga.	.20
1 Fitzgerald	.20	1 McKay's Late	.50
Total List Price			$1.60
COLLECTION PRICE			$1.00

STANDARD ABUNDANCE COLLECTION

1 Abundance	$.30	1 McKay's Late	$.50
1 Crimson Beauty	.30	1 Waddell	.30
1 Lamont	.30	1 Willett	.40
Total List Price			$.210
COLLECTION PRICE, ONLY			$1.50



Our Three Sizes of Peach Trees

Both above collections are selected with the purpose of giving our customers the very choicest varieties for family use, and make all these varieties very low in price.

We repeat for March our February "Bundle" offer of Peach Trees.

Extra size,	10 trees to the bundle, per bundle.	$1.50
Regular size,	20 trees to the bundle, per bundle.	1.75
Medium size,	25 trees to the bundle, per bundle.	1.50

Each bundle only one variety and bundle will not be broken at these prices.

This offer does not apply to the special varieties offered in our "Abundance" Collection, but those varieties may be sold by the bundle if desired at the hundred rate for those varieties for the different sizes.

DWARF COLOR COLLECTION

6 same varieties in Dwarf Peach Trees as the above STANDARD COLOR COLLECTION.

Total List Price	$2.20
COLLECTION PRICE	$1.50

RASPBERRIES AND BLACKBERRIES

In the Garden Collection of Raspberries and Blackbird Collection of Blackberries, we have selected with reference to quality and succession in season, and both collections are made up of only good varieties for home use.

GARDEN COLLECTION			
6 Columbian, pur.	$.25	6 Marlboro, red	$.25
6 Cuthbert, red	.25	6 Gregg, black	.25
6 Herbert, red	.50		
List Price			$1.50
COLLECTION PRICE			$1.00

BLACKBIRD COLLECTION			
6 Agawam	$.25	6 Snyder	$.20
6 Ancient Brittain	.30	6 Taylor	$.20
6 Blowers	.50		
List Price			$1.45
COLLECTION PRICE			$1.00

THREE COLLECTIONS OF DELICIOUS GRAPES

THE DESSERT COLLECTION	
1 Campbell, black	$.30
1 Delaware, red	.20
1 Winchell, white	.30
Total List Price	$.80
COLLECTION PRICE	$.50

THE ARBOR COLLECTION	
1 Catawba, red	$.15
1 Campbell, black	.30
1 Delaware, red	.20
1 Niagara, white	.15
1 Moore Early, black	.15
1 Winchell, white	.30
Total List Price	$1.25
COLLECTION PRICE	$1.00

THE LAKESIDE COLLECTION			
4 Black Varieties			
1 Concord	$.15	1 Moore Early	$.15
1 Campbell	.30	1 Worden	.15
4 Red Varieties			
1 Agawam	.15	1 Catawba	.15
1 Brighton	.20	1 Delaware	.20
4 White Varieties			
1 Empire State	.20	1 Niagara	.15
1 Moore's Dia.	.20	1 Winchel	.30
Total List Price, Separately			$2.30
COLLECTION PRICE			$1.50

McKAY'S GIANT ASPARAGUS

Asparagus

$1.00 per 100, $6.00 per 1000

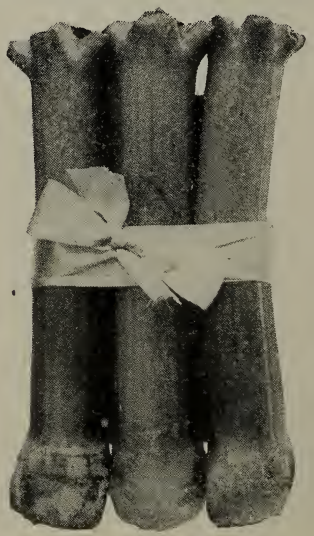
CONOVER'S COLLOSAL PALMETTO

McKAY'S GIANT—A new variety originating in New Jersey, which has proven its value as a great cropper. It is a green variety similar in appearance to Palmetto. 50c per 25, $1.25 per 100, $10.00 per 1000

Rhubarb

McKAY'S MAMMOTH—A very strong growing, tender, delicious variety which with us, under forced conditions has made a growth of four inches a day. Try it; Knock out both heads from any old barrel, place it over a plant, and watch it grow!

25c each, $2.50 per doz.



McKAY'S MAMMOTH RHUBARB